L Number	Hits	Search Text	DB	Time stamp
1	40	Peter NEAR MA	USPAT; US-PGPUB; EPO; JPO; DERWENT; USOCR	2004/03/19 11:17
2	130	((hydrogel WITH alginate) SAME (shrink$10 or swell$10 or maintain$10 or uniform$10)) AND control$3	USPAT; US-PGPUB; EPO; JPO; DERWENT; USOCR	2004/03/19 11:27
3	145	((hydrogel WITH alginate) SAME (shrink$10 or swell$10 or maintain$10 or uniform$10))	USPAT; US-PGPUB; EPO; JPO; DERWENT; USOCR	2004/03/19 11:24
5	232	hydrogel WITH alginate WITH calcium	USPAT; US-PGPUB; EPO; JPO; DERWENT; USOCR	2004/03/19 11:31
6	15024	alginate SAME calcium	USPAT; US-PGPUB; EPO; JPO; DERWENT; USOCR	2004/03/19 11:31
7	717	(alginate SAME calcium) and (shrink$6 swell$6 same maintain$6)	USPAT; US-PGPUB; EPO; JPO; DERWENT; USOCR	2004/03/19 11:32
8	588	((alginate SAME calcium) and (shrink$6 swell$6 same maintain$6)) and (seperate transfer$6 chang$6)	USPAT; US-PGPUB; EPO; JPO; DERWENT; USOCR	2004/03/19 11:33
9	2	(((alginate SAME calcium) and (shrink$6 swell$6 same maintain$6)) and (seperate transfer$6 chang$6)) and (calcium WITH ion WITH concen$6)	USPAT; US-PGPUB; EPO; JPO; DERWENT; USOCR	2004/03/19 11:34
10	38	(alginate SAME calcium) and (calcium WITH ion WITH concen$6)	USPAT; US-PGPUB; EPO; JPO; DERWENT; USOCR	2004/03/19 11:37
12	188	((alginate SAME calcium) and (shrink$6 swell$6 same maintain$6)) and (calcium WITH ion)	USPAT; US-PGPUB; EPO; JPO; DERWENT; USOCR	2004/03/19 11:38
13	33	(US-6184266-$ or US-6165225-$ or US-6129761-$ or US-6027744-$ or US-6060534-$ or US-5944754-$ or US-5958443-$ or US-5855613-$ or US-5658343-$ or US-5587175-$ or US-5578314-$ or US-5516532-$ or US-4902295-$ or US-6333194-$ or US-6171610-$ or US-5876742-$ or US-5502082-$ or US-5464629-$ or US-5102666-$ or US-5084350-$ or US-5089606-$ or US-4778749-$ or US-4443339-$ or US-4273734-$ or US-6497902-$ or US-5902745-$).did. or (US-6281257-$ or US-6673285-$ or US-6486285-$).did. or (US-20020005600-$ or US-20030073158-$).did. or (WO-2062968-$ or WO-3033580-$).did.	USPAT; US-PGPUB; EPO	2004/03/19 11:40

=> d his

(FILE 'HOME' ENTERED AT 11:55:50 ON 19 MAR 2004)

FILE 'MEDLINE, AGRICOLA, CANCERLIT, SCISEARCH, CAPLUS, MEDICONF' ENTERED AT 11:55:59 ON 19 MAR 2004

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L1         31949 S ALGINATE
L2          2506 S L1 AND (SHRINK? OR SWELL? OR MAINTAIN? OR UNIFORM)
L3            62 S L2 AND (CALCIUM ION)
L4            35 DUP REM L3 (27 DUPLICATES REMOVED)
L5            35 SORT L4 PY
L6           436 S L1 AND (CALCIUM ION)
L7           159 S L6 AND CONCEN?
L8            93 DUP REM L7 (66 DUPLICATES REMOVED)
L9            93 FOCUS L8 1-
L10           56 S L9 AND PY<=1998
L11            7 S L10 AND (TRANSFER? OR SPERATE OR CHANGE)
                 E MA PETER?/AU
L12           43 S E2
L13           37 DUP REM L12 (6 DUPLICATES REMOVED)
L14            4 S L13 AND L1
L15            0 S L6 AND 0.000?
L16            2 S L6 AND 0.00?
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=> d an ti so au ab pi l14 1-4

L14 ANSWER 1 OF 4 CAPLUS COPYRIGHT 2004 ACS on STN
AN 2002:246093 CAPLUS
DN 137:268358
TI Controlling diffusion of solutes through ionically crosslinked **alginate** hydrogels designed for tissue engineering
SO Materials Research Society Symposium Proceedings (2001), 662(Biomaterials for Drug Delivery and Tissue Engineering), LL1.5/1-LL1.5/6
CODEN: MRSPDH; ISSN: 0272-9172
AU Kuo, Catherine K.; **Ma, Peter X.**
AB Tissue engineering aims at creating new tissues as alternatives to organ transplants. Our approach is to incorporate cells into biodegradable polymer scaffolds designed to temporarily support new tissue formation. An important requirement of scaffolds is homogeneity. Homogeneity ensures structural integrity, uniform distribution of cells, and uniform porosity throughout the scaffold. Controlling pore sizes is necessary to regulate exchange of nutrients and waste products for cells. Pores too large can provide entryway to immune cells that can harm allogenic cells and developing tissue. We have fabricated three-dimensionally defined, homogeneous, ionically crosslinked **alginate** gels with a controlled slow-gelation system involving CaCO3 and D-glucono-δ-lactone. We varied the structural parameters and **alginate** types of these gels to control the diffusion of glucose, vitamin B12 and FITC-dextran (mol. wts. of 180, 1355 and 9500, resp.) through the gels. Expts. were performed with gel disks placed between side-by-side donor and receptor chambers in a humidified incubator at 37°. Samples were taken periodically and measured on a UV-Vis spectrophotometer. Generally, diffusion coefficient (D) increased with decreasing solute size. Varying structural parameters of the gels did not have a significant effect on diffusivity of vitamin B12. In contrast, for gels made with a Ca2+ to carboxyl molar ratio of 0.36, D of FITC-dextran increased from (2.88±0.52)+10-7 to (4.66±0.48)+10-7 cm2/s as **alginate** concentration decreased from 3.2% to 1.5%, resp. D of FITC-dextran also increased from (3.17±0.30)+10-7 to (4.66±0.48)+10-7 cm2/s as crosslinking d. decreased for 1.5% **alginate** gels from a Ca2+ to carboxyl molar ratio of 0.72 to 0.36, resp. D was highest for **alginate** gels with the highest guluronic acid content. Controlling diffusivity allows **alginate** gels with specific properties to be fabricated for tissue engineering scaffolding and other biomedical applications.

L14 ANSWER 2 OF 4 CAPLUS COPYRIGHT 2004 ACS on STN
AN 2001:417069 CAPLUS
DN 135:33965

TI Ionically crosslinked hydrogels with adjustable gelation time
SO PCT Int. Appl., 29 pp.
CODEN: PIXXD2
IN **Ma, Peter X.**
AB Biocompatible hydrogels, for: scaffoldings for tissue engineering; cell encapsulation matrixes; injectable bulking materials for cosmetic and functional restorations; controlled release matrixes; gene delivery vehicles; immunoprotection matrixes; immobilization materials; food additives; medical gels; conductive electrode gels; lubricious coatings; film forming creams; membranes; superabsorbents; hydrophilic coatings; and wound dressings. The hydrogels include: at least one water-soluble polymer/copolymer; and at least one slow and/or fast dissolving and/or releasing divalent and/or multivalent cation-containing compound At least one of the monomers is an acid, and/or contains an acid group or a derivative thereof, e.g., **alginate**. Such monomer reacts with the cations to form a three-dimensional ionically crosslinked hydrogel composition A method for preparing such a composition comprises the step of controlling a rate of gel formation by varying at least one of: solubility of the cation containing compds.; cation concentration; mixture of cation containing compds.; polymer concentration;
gelation temperature

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI WO 2001040370	A2	20010607	WO 2000-US31635	20001117
WO 2001040370	A3	20020926		

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG

US 6497902	B1	20021224	US 1999-452494	19991201

L14 ANSWER 3 OF 4 CAPLUS COPYRIGHT 2004 ACS on STN
AN 2000:798328 CAPLUS
TI Diffusivity of 3D, ionically crosslinked **alginate** hydrogels.
SO Abstracts of Papers - American Chemical Society (2000), 220th, POLY-232
CODEN: ACSRAL; ISSN: 0065-7727
AU Kuo, Catherine K.; **Ma, Peter X.**
AB Homogeneous scaffolds are necessary in tissue engineering to ensure structural integrity, uniform distribution of the cells, and also uniform porosity throughout the scaffold. Our previous work has demonstrated formation of homogeneous **alginate** gels by a slow gelation system with control over mech. properties and homogeneity. In this work we studied the influence of polymer concentration on the diffusional properties of the homogeneous, ionically crosslinked **alginate** gels. Diffusion expts. were carried out with vitamin B12 and FITC-dextran with mol. wts. of 1355 and 9500, resp. The diffusion coefficient of FITC-dextran through the gels of higher **alginate** concentration was significantly lower than that with lower **alginate** concentration This trend was not seen in vitamin B12 studies. These results demonstrated that structural parameters can be varied to potentially control the diffusivity of large mols. such as proteins or growth factors which are important to cell growth and tissue development.

L14 ANSWER 4 OF 4 CAPLUS COPYRIGHT 2004 ACS on STN
AN 2000:594144 CAPLUS
DN 133:313591
TI Diffusivity of three-dimensional, ionically crosslinked **alginate** hydrogels
SO Polymer Preprints (American Chemical Society, Division of Polymer Chemistry) (2000), 41(2), 1661-1662
CODEN: ACPPAY; ISSN: 0032-3934
AU Kuo, Catherine K.; **Ma, Peter X.**
AB This work show that ionically crosslinked Ca **alginate** gels formed with controllable mech. properties, homogeneity, swelling behavior

and permeability can be tailored specifically for tissue engineering or other biomedical applications.